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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,224	04/10/2006	Poul E. Nielsen	H0610.0385/P385	4975
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DICKSTEIN SHAPIRO LLP 1825 EYE STREET NW Washington, DC 20006-5403			EXAMINER CUTLIFF, YATE KAI RENE	
			ART UNIT	PAPER NUMBER
			1621	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/541,224	Applicant(s) NIELSEN ET AL.	
	Examiner YATE' K. CUTLIFF	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 August 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Status of Claims

1. Claims 1 - 9 are pending.
Claims 1 - 9 are rejected.

Response to Amendment

2. The amendment to claims 1 and 7, submitted August 21, 2008 is acknowledged and entered.

Response to Arguments

3. Applicant's arguments, see page 4, filed August 21, 2008, with respect to claim 7 have been fully considered and are persuasive in view of the amendment to claim 7. The 35 U.S.C. 112 second paragraph rejection of claim 7 has been withdrawn.
4. Applicant's arguments, see pages 4 and 5, filed August 21, 2008, with respect to the rejection(s) of claim(s) 1-9 under 35 U.S.C. 103(a) have been fully considered and are persuasive, in view of the amendment to step c of claim 1; and the fact that Tierney carbonylizes the methanol in the first reaction. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made as set out below.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kaufman (US 263,893), in view of Sie (US 5,216,034) or Konig et al. (US 5,631,302) and further in view of Woodhouse (US 2,205,184).

9. The rejected claims cover, inter alia, a process for production of methanol comprising, the conversion of a feed stream into a converted process stream in the presence of a catalyst active in the conversion of hydrogen, carbon monoxide and carbon dioxide into methanol; cooling of said converted process stream to a cooled process stream having a temperature of 20-200°C, which is lower than the converted

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process stream; hydrogenation of the cooled process stream, **in the presence of the methanol synthesis gas**, into a hydrogenated process methanol-rich stream in the presence of a hydrogenation catalyst; cooling of said hydrogenated process methanol-rich stream and phase separation of the cooled, condensed process stream into a gas phase and a liquid crude methanol.

10. Kaufman discloses that it is known that hydrogen and oxides of carbon may be made to react exothermically in the presence of certain catalyst to form hydrocarbons having more than one carbon atom per molecule and oxygenated organic compounds comprising alcohols, aldehydes and ketones. Further, that the synthesis process is generally accomplished in the presence of metal or an oxide of a metal, such as one chosen from Group VIII of the periodic table. (see column 1, lines 17-30). Additionally, Kaufman states that hydrogenation referred to is of wider application and includes within its scope the hydrogenation of any suitable carbon oxide. (see column 2, lines 4-9). Furthermore, Kaufman discloses a process for the hydrogenating the aldehydes and ketones, obtained as products from the hydrogenation of oxides of carbon, to their corresponding alcohols. (see column 1, lines 5-16). In Kaufman the reaction effluent produced is cooled to a temperature within the range of 40 to 105°F (4.4 to 65.5°C), then the resultant condensate is separated into a hydrocarbon-rich phase, a water-rich phase and an uncondensed gas phase. (see column 2, lines 10-25). The uncondensed gas phase is scrubbed and forms a tail gas containing hydrogen, carbon monoxide, carbon dioxide and hydrocarbons. Kaufman states that the tail gas obtained from the scrubbing of the uncondensed gas phase would not ordinarily effect the operability of

the present process with regards to the hydrogenation of aldehydes and ketones to their corresponding alcohols. (see column 3, lines 44-54).

Kaufman fails to disclose the following: that the catalyst used is a copper based catalyst; the copper content of the catalyst is in the range of 10-95%; and the form and shape of the hydrogenation catalyst.

However, Sie discloses a process for producing methanol by converting the synthesis gas mixture of hydrogen, carbon monoxide and carbon dioxide using copper-type catalyst. (see Example, column 4). In Sie, the copper is 25% of the catalyst. (see column 5, lines 1-4). Additionally, König et al. discloses a process that uses synthesis gases of hydrogen and carbon oxides and reacts them with copper-containing catalyst to produce methanol. (see column 1, lines 4-10). In König et al. the catalyst contains 50 to 75% by weight CuO. (see column 2, lines 65-67). Further, each of the cited references, Sie and König et al. show, at the time of Applicants' invention, that in methanol synthesis incorporating the use of a series of reactors, would invariably incorporate a means of heat exchange or cooling mechanism.

Furthermore, Woodhouse discloses the use of copper based catalyst in the hydrogenation of aldehydes that could be used in the hydrogenation of the ketone. (see column 1, lines 37-44 & column 2, lines 1-10)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to use a known technique as disclosed in Kauffman, to produce methanol from a feed of hydrogen, carbon monoxide and carbon dioxide in the presence of a catalyst containing a Group VIII metal and then use the tail

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gas (methanol synthesis gas) to hydrogenate any of the cooled reaction effluents (cooled process streams) for further production of methanol; and tweaking the process by using replacing the Group VIII catalyst with copper based catalyst as suggested by Sie or Konig et al., and Woodhouse; and obtain methanol with a reasonable expectation of success.

Variations of particular work available in one field of endeavor may be prompted by design incentives and other market forces, either in same field or different one, and if person of ordinary skill in art can implement predictable variation, 35 U.S.C. §103 likely bars its patentability; similarly, if particular technique has been used to improve one device, and person of ordinary skill would recognize that it would improve similar devices in same way, then using that technique is obvious. *KSR International co. v. Teleflex Inc.*, 550 U.S. at ____, 82 USPQ2D 1385 (U.S. 2007).

With regard to the shape or form of the catalyst it is not unobvious, since one of ordinary skill in the art would have found it commonplace to utilize the catalyst, suitable for his purposes, which are found to exhibit the utility as catalyst well-known in his craft. Therefore, absent a showing of criticality and unexpected beneficial results, the catalyst shape or form is part of the artisan's routine of experimentation.

11. No claims are allowed.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to YATE' K. CUTLIFF whose telephone number is (571)272-9067. The examiner can normally be reached on M-TH 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Daniel M. Sullivan can be reached on (571) 272 - 0779. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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